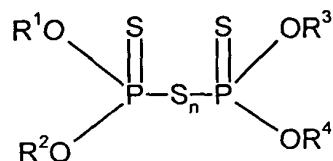


**WHAT IS CLAIMED IS:**

1. A process for the production of dithiophosphoric acid polysulfide mixtures of the formula



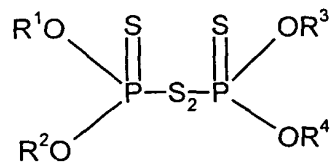
in which

$\text{R}^1$  to  $\text{R}^4$  are identical or different and denote a linear or branched  $\text{C}_1$ - $\text{C}_{18}$  alkyl residue,  $\text{C}_1$ - $\text{C}_{18}$  alkenyl residue,  $\text{C}_5$ - $\text{C}_{28}$  cycloalkyl residue,  $\text{C}_5$ - $\text{C}_{28}$  cycloalkenyl residue as well as a  $\text{C}_6$ - $\text{C}_{28}$  aryl residue or  $\text{C}_7$ - $\text{C}_{28}$  aralkyl residue

and

$n$  denotes a number from 2.5 to 3.5,

comprising the step of reacting dithiophosphoric acid disulfides of the formula

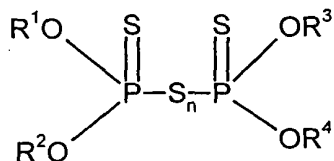


in which

$\text{R}^1$  to  $\text{R}^4$  have the above-stated meaning,

with 0.5 to 1.5 mol of sulfur, optionally in the presence of a solvent, at temperatures of 100 to 140°C.

2. A sulfur donor for the vulcanization of natural and synthetic rubber comprising dithiophosphoric acid polysulfide mixtures of the formula



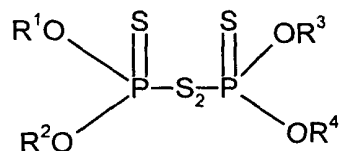
in which

R<sup>1</sup> to R<sup>4</sup> are identical or different and denote a linear or branched C<sub>1</sub>-C<sub>18</sub> alkyl residue, C<sub>1</sub>-C<sub>18</sub> alkenyl residue, C<sub>5</sub>-C<sub>28</sub> cycloalkyl residue, C<sub>5</sub>-C<sub>28</sub> cycloalkenyl residue as well as a C<sub>6</sub>-C<sub>28</sub> aryl residue or C<sub>7</sub>-C<sub>28</sub> aralkyl residue

and

n denotes a number from 2.5 to 3.5,

wherein said dithiophosphoric acid polysulfide mixture is produced by reacting dithiophosphoric acid disulfides of the formula

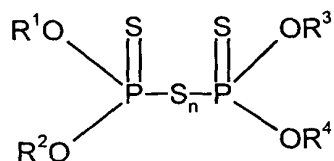


in which

R<sup>1</sup> to R<sup>4</sup> have the above-stated meaning,

with 0.5 to 1.5 mol of sulfur, optionally in the presence of a solvent, at temperatures of 100 to 140°C.

3. A sulfur donors for the latex vulcanization of natural and synthetic rubber latex comprising dithiophosphoric acid polysulfide mixtures of the formula



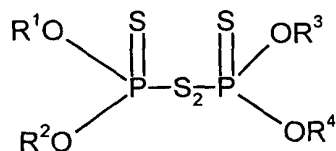
in which

R<sup>1</sup> to R<sup>4</sup> are identical or different and denote a linear or branched C<sub>1</sub>-C<sub>18</sub> alkyl residue, C<sub>1</sub>-C<sub>18</sub> alkenyl residue, C<sub>5</sub>-C<sub>28</sub> cycloalkyl residue, C<sub>5</sub>-C<sub>28</sub> cycloalkenyl residue as well as a C<sub>6</sub>-C<sub>28</sub> aryl residue or C<sub>7</sub>-C<sub>28</sub> aralkyl residue

and

n denotes a number from 2.5 to 3.5,

wherein said dithiophosphoric acid polysulfide mixture is produced by reacting dithiophosphoric acid disulfides of the formula



in which

R<sup>1</sup> to R<sup>4</sup> have the above-stated meaning,

with 0.5 to 1.5 mol of sulfur, optionally in the presence of a solvent, at temperatures of 100 to 140°C.

2025-03-10 10:10:10